

I claim:

1. A method of manufacturing at least portion of a micro-reactor comprising:  
providing a plurality of metal foil layers;  
forming a plurality of metal foil layers into specific shapes by use of at least one lithographic technique;  
5 stacking and aligning said plurality of formed metal layers;  
connecting together said plurality of formed metal layers to form said portion of said micro-reactor.
2. The method as defined in claim 1, wherein a plurality of said metal foil layers are formed of a catalyst metal.
3. The method as defined in claim 1, wherein a plurality of said metal foil layers each have an average thickness less than about 400 microns.
4. The method as defined in claim 1, wherein said at least one lithographic technique includes photo-etching.
5. The method as defined in claim 1, wherein said step of forming includes the formation of at least one alignment opening in at least one metal foil layer.
6. The method as defined in claim 5, wherein said step of stacking and aligning includes the use of at least one alignment opening formed in a plurality of metal foil layers.
7. The method as defined in claim 1, wherein said step of connecting together includes brazing together a plurality of metal foil layers.
8. The method as defined in claim 7, including the step of coating at least one side of

a plurality of metal foil layers with a brazing metal.

9. The method as defined in claim 7, wherein said brazing metal has an average coating thickness of less than about 10 microns.

10. The method as defined in claim 7, wherein said step of brazing includes vacuum brazing.

11. The method as defined in claim 1, including the step of generating a computer image of a plurality of said formed metal foil layers.

12. The method as defined in claim 1, including the step of generating a computer image of said portion of said micro-reactor and then sectioning said computer image of said portion of said micro-reactor into a plurality of sectional images that correspond to a plurality of said formed metal foil layers.

13. The method as defined in claim 12, including the step of forming at least one mask from at least one of said computer images and at least partially forming at least one of said formed metal foil layers using said mask.

14. The method as defined in claim 12, including the step of forming at least one mask from at least one of said sectional images and at least partially forming at least one of said formed metal foil layers using said mask.

15. A portion of a micro-reactor formed of a plurality of metal layers, each of said metal layers connected together by a brazing metal having a different composition than said metal of said metal layers.

16. The micro-reactor as defined in claim 15, wherein a plurality of said metal layers are formed of a catalyst metal.

17. The micro-reactor as defined in claim 15, wherein a plurality of said metal layers each have an average thickness less than about 400 microns.

18. The micro-reactor as defined in claim 15, wherein said brazing metal has an average coating thickness of less than about 10 microns.